



# Content



Global ferrochrome and chrome ore production

BA Ferrochrome – Fundamental part of Outokumpu's operations

BA Ferrochrome – Global ESG leader in ferrochrome industry

Kemi mine – Towards carbon neutrality and sustainable mining

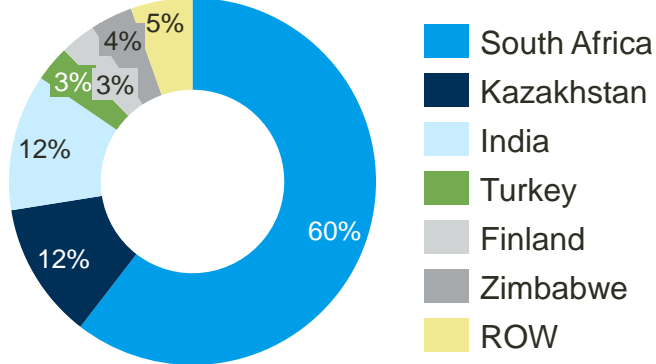
Summary

# Outokumpu has the only chrome mine in the EU area

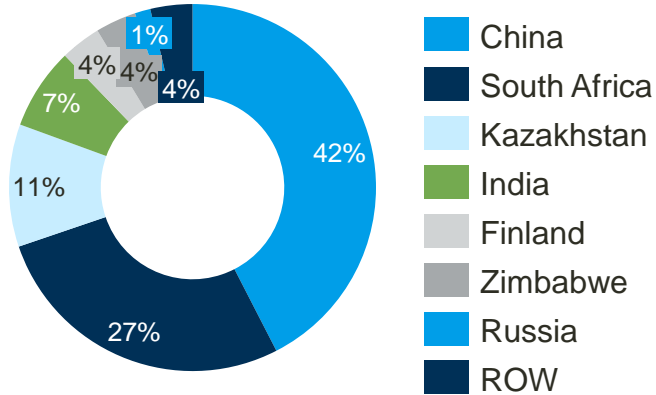
Geographical distribution: mines and furnaces



Chrome ore production by country, 2021



FeCr production by country, 2021



# Own ferrochrome production is a fundamental part of Outokumpu's fully integrated value chain

Largest ferrochrome producer in Europe

Part of one of the most integrated stainless steel plants in the world

Safe and modern operations

Kemi chrome mine



- The only chrome mine in the EU, largest underground mine in Finland
- Minimal impact to nature, concentration process based on gravity separation without chemicals

Tornio ferrochrome plant



- Three submerged arc furnaces (SAF) with nominal annual capacity of 530,000 tonnes, SAF3 largest and most efficient furnace globally<sup>1</sup>
- Substantial cost benefits due to proximity of mine, high energy efficiency and by-product utilization
- Ferrochrome delivered to Outokumpu's melt shops and to external customers

# Outokumpu is a global ESG and sustainability leader in ferrochrome industry

## Environment



CO<sub>2</sub> footprint -70% lower than industry peer average <sup>1)</sup>  
 Environmental impacts monitored

## Social



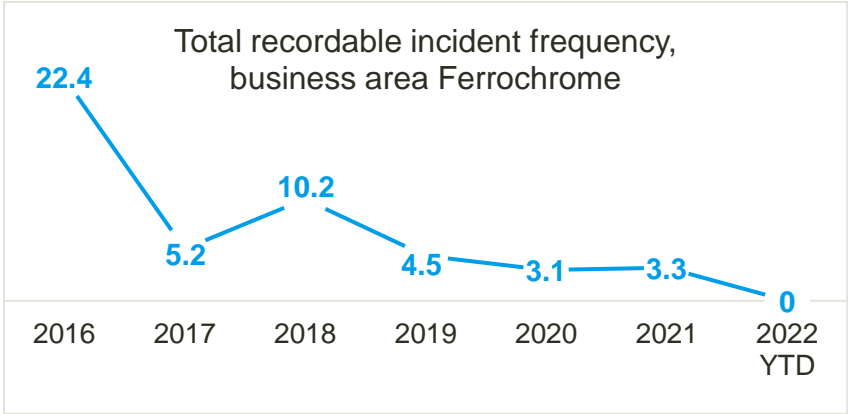
Strong focus on safety in operations  
 Open dialogue with local community

## Governance



Systematic Code of Conduct training  
 Sustainable supply chain management

Recognized in sustainability



<sup>1)</sup> ICDA LCI, Industry average 5.2 vs. Outokumpu 1.6 ton CO<sub>2</sub>-eq/ton FeCr



# Kemi mine – Towards carbon neutrality and sustainable mining



## Systematic CO<sub>2</sub> emission reduction, carbon neutral by 2025

- Carbon free energy
- Machines and concentrate transportation to biofuel
- Extending electrification for lower emissions and exposures



## Sustainable utilization of ore extends current supply up to the end of 2040s

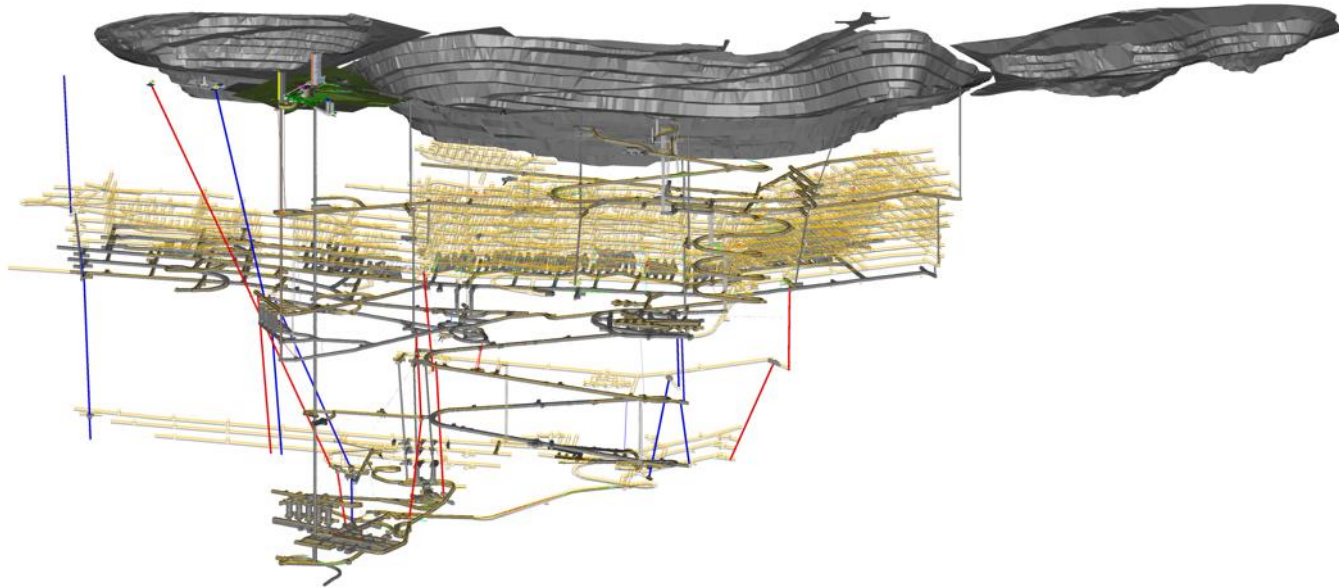
- Deep mine investment
- Fine concentrating plant expansion
- Sub level caving (SLC) mining method



## Digitalization improves safety, productivity and sustainability

- Improved situational picture and communication
- Tele-remote and autonomous machine operations
- Updated IT infrastructure

# Deepening of Kemi mine in 2018–2022 secures our long-term chrome ore supply



**EUR 283 million investment in new production area below existing mine**

- EUR 49 million capex in 2022
- EUR 12 million capex in 2023

**New main level at 1,000 meters depth**

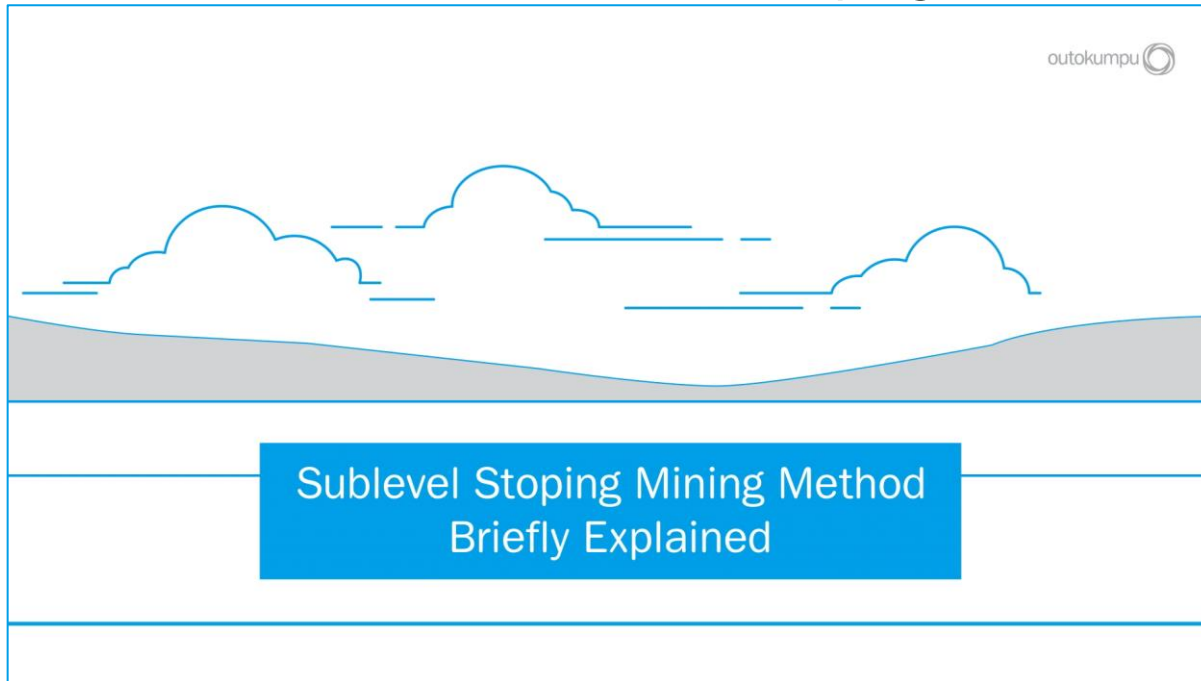
- New ore handling and hoisting system

**Status**

- First ore feed in 2020
- Production ramp-up by the end of 2022

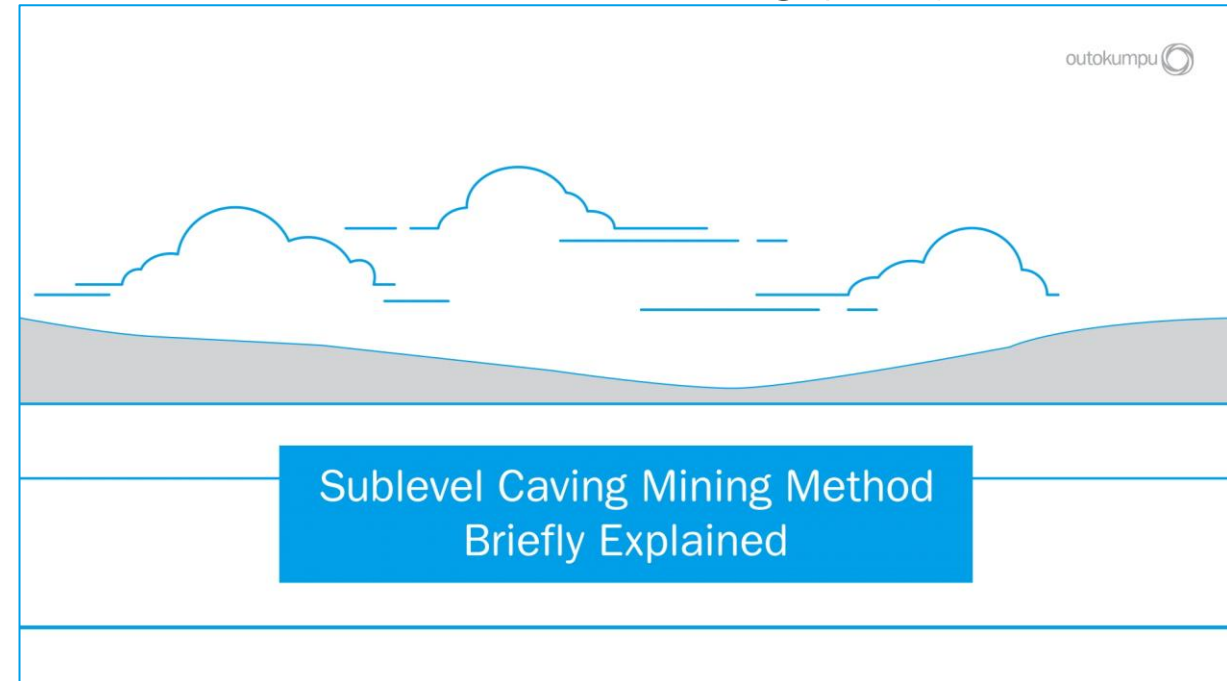
# We will improve significantly our mineral resource utilization by implementing a new mining method

Current: Sublevel Stopping



- Mining progresses upwards
- Supportive pillars are left for support

New: Sub Level Caving (SLC)



- Mining progresses downwards
- Backfilling not needed
- Supportive pillars not needed
- Better yield from orebody



# Further strengthening our position as the ESG leader with our ferrochrome operations

Enabling net zero ambition of our clients and their clients

Kemi mine – towards carbon neutrality and sustainable mining

Global ESG and sustainability leader in the ferrochrome industry

Only chrome mine in the EU offering reliability and strategic importance to customers

Carbon neutral Kemi mine by 2025

Sustainable utilization of chrome ore extends current supply up to end of 2040s at levels above 1,000 m

Digitalization improves safety, productivity and sustainability

# Thank you!

Stay tuned and  
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